

**Math Learning Goals**

- Consolidate integer addition with integer tiles.
- Add integers using number lines.
- Compare the two methods for addition of integers.

**Materials**

- BLM 2.11.1
- sets of integer tiles
- large cards with numbers  $-4$  to  $4$

**Assessment Opportunities****Minds On...****Whole Class → Problem Solving**

Pose the problem: If a spider climbs 3 metres up a water spout during the day, then slides back down 2 metres every night, how many days does it take to reach the top of a 10-metre spout?

Discuss multiple ways to model and solve this problem. Using the integer addition sentence  $(+10) + (+20)$ , prompt students to ask a question related to everyday life whose answer could be determined by this addition sentence, e.g., if the spider climbed 10 metres up the water spout today, and 20 m tomorrow, how high will the spider be?

**Pairs → Connecting**

Write five symbolic representations of addition sentences on the board. In pairs, students write corresponding questions.

Answer:  
It takes eight days for the spider to reach the top.

A diagram, number line, integer tiles, integer addition, and graphs are useful.

Technology alternative for any part of lesson:  
[Integer.gsp](#)

**Action!****Whole Class → Modelling/Discussion**

Nine volunteers line up, evenly spaced, facing the class to form a human number line. The 5<sup>th</sup> (middle) person represents 0. Students display numbers corresponding to their position. ( $-4$  through  $4$ )

Another student stands in front of the person represents 0 and then walks three places in the positive direction to stand in front of the person at  $+3$ .

Ask: What integer can represent the move so far?  $(+3)$  Record the response. This student walks one more place in the positive direction. Ask: What integer can represent this second move?  $(+1)$  Record this beside the previous answer. Demonstrate that the "trip" so far can be represented by the addition sentence  $(+3) + (+1)$ , whose answer can be determined by looking at the volunteer's current location.  $(+4)$

Use a similar procedure for demonstrating addition of two negative integers, then a positive and a negative integer.

Connect the use of a number line to show integer addition to the questions on BLM 2.11.1 – always start at 0, use red arrows pointing to the right for positive integers, and blue arrows pointing to the left for negative integers.

**Individual → Problem Solving**

Students complete BLM 2.11.1, representing the addition questions with blue and/or red arrows, and determining answers.

Add further visual cues, such as having the  $+3$  person and the  $+1$  person hold their hands up.

OR  
model the trip with a visual drawing on the board.

Addition on the number line: start at 0, show first arrow, second arrow begins where first one ends, resulting destination is the sum.

See *Elementary and Middle School Mathematics: Teaching Developmentally* by John A. Van de Walle, p. 425, for more information on the coloured arrow techniques.

Students should use the word *sum* as the result of addition.

**Consolidate Debrief****Small Groups → Discussion**

Students compare each of their answers against those of other group members and share their strategy for addition. Discuss as a class. Compare and connect to the strategies students developed on Day 6.

**Curriculum Expectations/Self-Assessment/Checklist:** Students reflect on their competency with addition of positive and negative integers, using a number line.

**Home Activity or Further Classroom Consolidation**

Explain to another person the similarities and contrasts between using number lines vs. integer tiles to perform integer addition. Record thoughts in your math journal, along with your personal preference.

Concept Practice  
Reflection  
Problem Solving

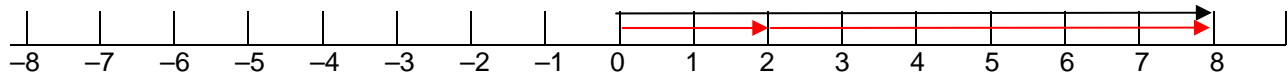
## 2.11.1: Integer Addition Using Number Lines

Name:

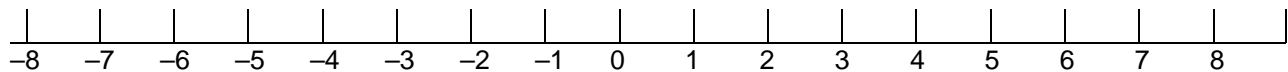
Date:

Show each number in the addition with a coloured arrow on the corresponding number line. Draw a third arrow to indicate the sum. The first one is done for you.

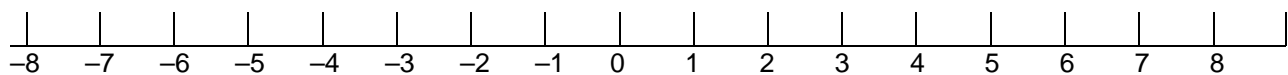
1.  $(+2) + (+6) = 8$



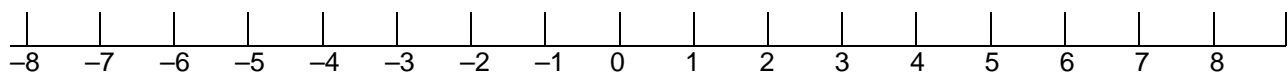
2.  $(-3) + (-4) =$



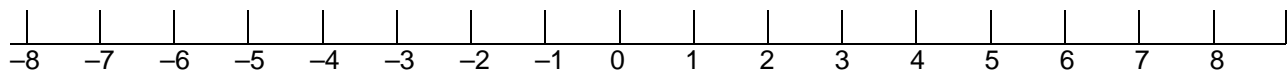
3.  $+5 + (-6) =$  (**Note:** Brackets around an integer are needed only after an operation symbol.)



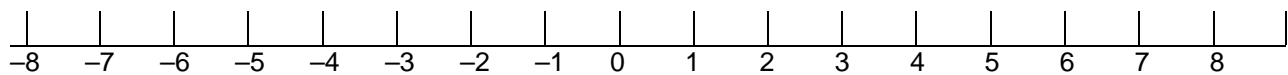
4.  $-7 + (+2) =$



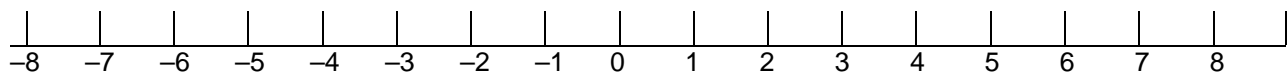
5.  $+2 + (-2) =$



6.  $-5 + (+4) + (-3) =$



7.  $+1 + (-2) + (+3) + (-4) + 5 =$



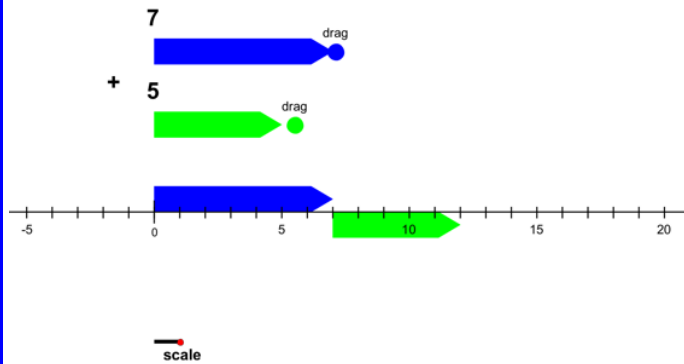
Describe a strategy for adding integers.

# Integer (GSP® 4 file)

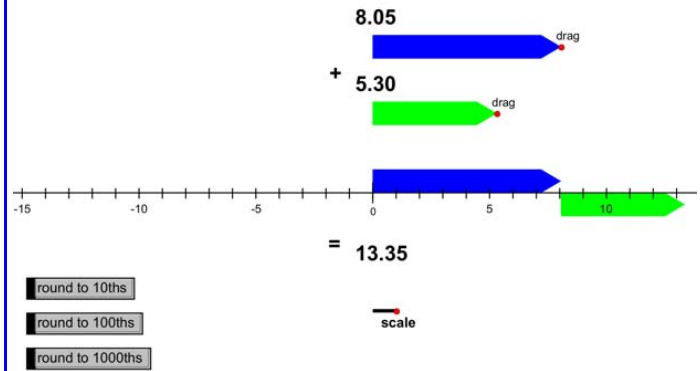
[Integer.gsp](#)

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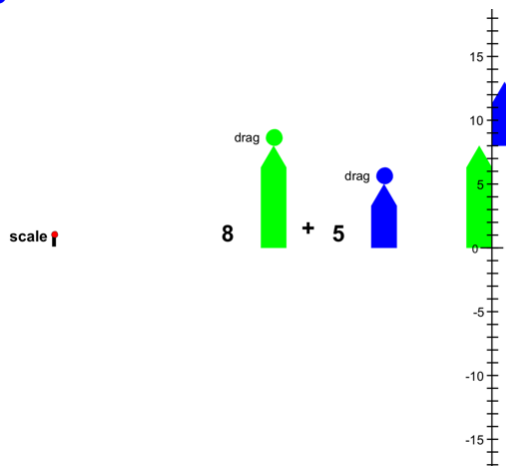
This sketch is for use with the activity  
**Adding Integers**, which starts on  
page 32 of *Teaching Mathematics*.



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